

REMARKS

The rejections of Claims 11-13, 26, 28-30 and 35 as being unpatentable over Kraemer in view of Wilber and of Claim 14 as being unpatentable over Kraemer in view of Wilber and further in view of Yasuhara, both under 35 USC §103(a), are traversed. Reconsideration of these rejections is respectfully requested in view of the foregoing amendments and following remarks.

None of the cited references teaches or suggests the combinations set forth in the amended independent claims. In particular, there is no suggestion in these references of providing at an intake valve at the inlet of the pressurizing chamber a first spring for biasing the valve in the closing direction and a second spring for biasing the valve in the opposite direction. Nor is there found a suggestion of operating the valve with an electromagnetic driving device to control the valve's closing such that with an energized driving device the valve is relieved of the biasing force.

With respect to the Wilber document, the valve 26 does not employ either the claimed spring arrangement and/or the claimed electromagnetic driving device.

Applicants cannot agree that the Kraemer patent "teaches a fuel injection pump with all of the applicant's claimed features except; . . ." Nor can Applicants agree with the speculation about how the inlet valve is held open in the Kraemer pump in light of what appears to be an internal inconsistency

among the Abstract, the Specification and the Claims on the Kraemar patent as to the pump structure and operation. In this connection, Applicants would point to the following.

As described at col. 2, lines 35-47 and lines 53-63, as well as Claim 1 (col. 4, lines 10-14) in the Kraemer patent, the closing body 10 is maintained at an opening position when the solenoid 9 acting against the valve tappet 13 has been energized. Fuel discharge through the check valve 7 starts with the closure of the closing body 10 upon deenergization of the solenoid (see Fig. 3). The Abstract appears to describe a different functionality, namely during the deenergized state of the solenoid, fuel returns to the low pressure container 15 although Fig. 2 appears to show fuel returning to that container in the solenoid's energized state. Likewise, the Abstract seems to suggest that the fuel is fed to the high pressure reservoir 2 during the solenoid's energized state whereas Fig. 3 shows fuel being fed to that reservoir in the solenoid's deenergized state.

In any event, the Kraemer patent does not, like the Wilber patent does not, teach or suggest the now claimed features of Applicants' invention in which, when the solenoid 200 is energized, the second force of the second spring 202 is removed from the valve body 5 and the valve is closed, whereupon the fuel discharges through the discharge valve 6. Upon conclusion of a pump discharge stroke, and upon the piston 2 changing from a top dead center to a bottom dead center side, the valve body 5 thereupon opens in response to a differential force created between the first spring 5a and the second spring 202 (i.e., to a

differential pressure between an upper side pressure of the valve body 5 and a lower side pressure of the valve body 5) and fuel intake into the pressurizing chamber 12 begins.

In the Wilber apparatus, no electromagnetic device operates the check valve so that a response delay due to fluid loss occurs. A leak between the pistons 10, 14 and the cylinder 11 and a delay by the movement of the cam 10 is not directly transmitted to the piston 14 so that the Wilber system cannot achieve the superior response of the intake valve that occurs with the present invention.

The Kraemer pump does not have a second spring at the closing body 10, as shown in Figure 3. Thus, the tappet 13 and the closing body 10 are separated during a fuel discharging process. When the pump piston 3 changes from a top dead center to a bottom dead center side, the closing body 10 does not open until the fuel differential pressure is larger than the force of the spring 11. That is, the closing body 10 opens with an undesired delay unlike the present invention.

Applicants further note that the feature added to Claim 35 captures another unique aspect of the present invention, namely an arrangement that uses the pump body's dead space more effectively by fixing the driving mechanism there.

Accordingly, early and favorable action are now earnestly solicited

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If there are any questions regarding this response or the application in general, a telephone call to the undersigned would be appreciated since this should expedite the prosecution of the application for all concerned.

If necessary to effect a timely response, this paper should be considered as a petition for an Extension of Time sufficient to effect a timely response, and please charge any deficiency in fees or credit any overpayments to Deposit Account No. 05-1323 (Docket # 056205.48558C1).

Respectfully submitted,

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James F. McKeown
Registration No. 25,406

CROWELL & MORING, LLP
Intellectual Property Group
P.O. Box 14300
Washington, DC 20044-4300
Telephone No.: (202) 624-2500
Facsimile No.: (202) 628-8844
JFM:jeh:pcb